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ATLANTIC BOTTLENOSE DOLPHIN, *Tursiops Truncatus* HERD STUDIES IN THE MISSISSIPPI SOUND, U.S.A.: CAPTURE, FREEZE MARKING AND BIOLOGICAL SAMPLING

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ABSTRACT

A study was conducted between June and August, 1982 to collect, freeze mark, obtain biological data from and release 50 Atlantic bottlenose dolphins, Tursiops truncatus, in the Mississippi Sound, U.S.A. The purpose of the study was 1) To establish a data base for blood chemistry, microbiology, age, genetics, endocrinology, and morphometrics for dolphins inhabiting the Sound, and 2) To determine herd discreteness, social dynamics, and movements in the Mississippi Sound of selected herds.

Results from the sampling indicate that all the above mentioned parameters tested fall within the ranges established for Tursiops truncatus. We observed several herds in the Mississippi Sound that frequently intermingled amongst each other. There appears to be a seasonal abundance (April through September) of these mammals in the Sound. In the winter months (October through March) most of the animals leave the defined boundaries of the Sound and presumably stay a few miles south of the barrier islands that delineate the southern margin of the Mississippi Sound. Resighting studies are currently in progress to further study the movements and migrations patterns of these marine mammals.

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INTRODUCTION

The Atlantic bottlenose dolphin, (Tursiops truncatus) is one of the most common cetaceans inhabiting the southeastern United States Coastal waters. Because of its ability to adapt to captivity, training, and experimentation it is frequently displayed by oceanaria and used in research.

By the authority of the Marine Mammal Protection Act of 1972 and Endangered Species Act of 1973, the National Marine Fisheries Service (NMFS) is responsible for conserving and protecting the Atlantic bottlenose dolphin in U. S. waters. This is done by regulating the collection from United States waters through the issuance of permits. However, in order to properly manage the stock and set take-quotas, the National Marine Fisheries Service requests information on the abundance and discreteness of local herds. To fulfill these goals the NMFS conducts aerial surveys and herd studies. Asper and Odell (1980) and Odell and Asper (1982) using mark-recapture techniques were very successful in studying the social dynamics and movements of herds in the Indian-Banana River Complex, Florida, U.S.A.

Although much is known about the behavior, neurobiology, and pathology of Tursiops truncatus in captivity, very little is known about their biology in the wild (Asper & Odell, 1980). This is especially true for these dolphins inhabiting the Mississippi Sound. For prudent management of Tursiop stocks it is essential

to have information on their natural history, biology, social dynamics, abundance and movement in their natural habitat.

It has also been suggested that in-shore populations of Tursiops may be used as indicators for the health of an ecosystem (Asper & Odell, 1980; Dudok van Heel, 1973). Since the dolphin is on top of the food chain, it would, presumably through bioaccumulation, concentrate pollutants such as hydrocarbons, pesticides, and heavy metals in its tissues (Geraci and St. Aubin), 1980; St. Aubin & Solangi, 1983). Detrimental effects associated with the above mentioned pollutants would be reflected in subtle changes in selected tissues and blood parameters (St. Aubin & Solangi, 1983). Therefore, information and comparison of background levels of the listed pollutants from dolphins inhabiting pristine and contaminated areas would be vital to both industry and governmental agencies interested in developing or managing coastal areas.

OBJECTIVES

The purpose of the study was to (1) collect, mark, obtain biological data from and release 50 Atlantic bottlenose dolphins in the Mississippi Sound, U.S.A., (2) to establish a data-base for blood chemistry, microbiology, age, genetics, endocrinology, and morphometrics for dolphins inhabiting the Sound.

CAPTURE & HANDLING

Materials and Methods

Four boats and one surveillance/observation aircraft were used in the collection effort. The "Sawfish", a 10 m wooden vessel, served as the work-boat and command center for the whole operation. The "Sawfish" is specially designed to collect and handle dolphins. It has a low free-board, making it easy to bring the animals on board, and is equipped with a 115 h.p. Johnson outboard in its anterior section, allowing easy maneuvering and quick access to captured animals. The "Sawfish" has several wells that can be used to accommodate and process four to five animals at one time. The second boat, a 7 m V-hull, the "North American" equipped with a 200 h.p. Johnson outboard was used to carry portions of the net and four to five divers. The third boat, the "Four M's", a 5 m Sabre with a 100 h.p. Johnson outboard was used to carry five to six divers. The fourth boat, "The Malissa &", an 8 m Rienell cabin cruiser served as a laboratory, observation, and dive boat. This vessel had a refrigerator, desk space, and bathroom facilities and was used to accommodate the accompanying NMFS and APHIS (Animal and Plant Health Inspection Service) staff and other researchers that participated in the effort.

A Cessna 172 served as a spotter aircraft. Mr. Walter Vick, a 25 year veteran dolphin observer, was our scout in the air. Prior to the departure of the boats from the port, the aircraft would be in the air surveying the Mississippi Sound and guiding

the ground crew to the whereabouts of the dolphin herds. The use of a surveillance aircraft undoubtedly saved the group a lot of time and effort on the water in finding dolphins.

Approximately 25 to 27 people participated in the collection effort during any given day. Out of these 15 to 18 were divers experienced in handling dolphins, four boat captains, the principal investigators (curator and staff veterinarian of Marine Animal Productions), and one to two representatives from both APHIS and NMFS. From time to time researchers from other institutions interested in the biology and natural history of these mammals were accommodated.

As soon as a herd was sighted, the Sawfish maneuvered in its vicinity to evaluate the number in the herd and size of the animals in the group. A set was usually made on a herd containing four to five animals and without any nursing calves.

Two boats were used to make the set. The Sawfish always initiated the set dropping the net in the clockwise direction traveling at approximately 20 knots. The North American maneuvered counter clockwise at approximately 35 to 40 knots.

A 457 m long, 5 m deep net with a mesh size of 15 cm. was used. Three hundred and five meters (305 m) of this net were placed on the Sawfish while the remaining 152 m on the North American. As soon as the set was completed all the boats would position themselves equi-distance from each other around the perimeter of the net. If no animal entered the net at this time, the

circumference of the net was tightened gradually to induce the animals to hit. When an animal hit the net, divers from nearby boats responded immediately. The captured animal was kept above the water by the divers until the Sawfish was maneuvered to the site of the animals and the dolphin brought aboard, usually within minutes.

Data on the location of the set, number of animals per set, animals processed and released, processing time, environmental conditions and other related data were recorded in the Capture Event Data Sheet for lab analysis (Figure 1).

Results and Discussion:

A total of 53 dolphins, 20 males and 33 females, were processed and released into the Mississippi Sound. Out of these, 50 were marked between June 28 to August 2, 1982, as part of the contract. The additional three (1 male and 2 females) were processed between October 27 to November 2, 1982 at no cost to the NMFS. Twenty-two complete sets were made to obtain the 53 specimens. Our capture success-rate was approximately 90%. Figure 2 shows the boundaries for the Mississippi Sound where the study was conducted. Table 1 provides the summary of the capture events, location, number of animals handled, processed and released. Table 2 lists the different types of data collected and Table 3 the environmental data at the collection site.

The average time required to process an animal was 54.08 minutes (N=50; SD=19.93; SE=2.82). Processing time is defined

as the interval between the time an animal was brought on board and when it was released. In most cases we were able to process animals in 30 minutes or less. However, because we worked with 3 to 4 animals at any given time, the cumulative average time tended to be in the higher range. The average time per set, that is from commencement of the set to the release of the last dolphin on board, was 128.8 minutes (N = 19; SD = 47.9; SE = 10.9).

During the collection period from June to August 1982 we encountered two very sick dolphins that died during the capture effort. Both animals were males, between two to three years of age, and were collected from the same area but on separate dates. The first animal died within seconds after entering the net. A necropsy was performed within three hours of its death which revealed acute pneumonia in both lungs. The second animal died within three to five minutes after it had been on board. The necropsy showed severe fibrosis and necrosis in the liver and slight pneumonia in one lung. Complete necropsy reports were filed with the National Marine Fisheries Service. In both cases the cause of death was suggested to be "capture shock with predisposing illness". As for the remaining 110 animals handled during the study we did not observe any adverse effect related to the capture, handling, or processing; especially during liver and blubber biopsy procedures.

The cost analyses for the project are provided in Appendix C. Because of rising costs of such operations, NMFS should try to work with collectors of record in study areas in acquiring information from their incidental catch. This could considerably reduce the cost for such studies.

MORPHOMETRICS

Materials and Methods:

As soon as the animal was on board and stabilized, a suite of morphometric data based on (Asper and Odell, 1980 and Odell and Asper, 1982) were taken. These data were recorded in the Captured Individual Data Sheet and Morphometric Data Sheet (see Figures 3 and 4). The reasons for choosing the outlined body measurements were because their acquisition required the least amount of time and manipulation of the animal. In addition to the various measurements, a photographic profile of the dorsal fin and fluke was compiled for future reference and identification of these animals.

Results and Discussion:

The various measurements taken from each animal, and the averages for males, females and combined are listed in Tables 4, 5, and 6. However, for comparative purposes, each measurement was converted to represent a ratio of the total length of each animal. These data are presented in Table 7 and 8. Morphometric data for males was compared with those of females. Results of this analyses are provided in Table 9. There did not appear to be any significant difference ($t < .01$) between males and females in any of the parameters tested.

The length-weight relationship and averages for the animals processed are presented in Table 10. Linear regression analysis was performed on the length-weight data for males, females and

both sexes combined. Scattergrams for males, females and all animals combined are provided in Figures 5, 6 and 7 respectively. Using the formula $y = a\ x^b$ to fit a curvilinear growth curve (where y = weight in kg, b = intercept, a = slope of the line, and x = length in cm.), the relationship to estimate weight of an animal given the length or vice-versa for males is weight (kg) = 1.4445^{-05} x length (cm) $^{2.9671}$, r = 0.9086; for females weight (kg) = 7.3647^{-05} x length (cm) $^{2.6643}$, r = 0.8280; and for combined weight (kg) = 3.8023^{-05} x length (cm)$^{2.7871}$, r = 0.8623. These estimates are based on data from 52 animals, 20 males and 32 females. Based on the length-weight data obtained from the animals processed during the study we did not observe any statistically significant difference between males and females. However, the small sample size may be the cause for the lack of difference.

During the study, several methods for obtaining total length of an animal were tried. The method giving consistent results was when the animal was placed on its belly on a flat board fitted with a measuring tape. The use of this procedure usually resulted in the total length of 5 to 10 cm less than that obtained by other methods.

Both color (110 Kodacolor ASA 100) and black and white (Kodak panatomic x ASA 125) photographs were taken of the dorsal fin and the fluke. Profiles of both extremities are provided in Figures 8 through 31.

FREEZE MARKING

Materials and Methods:

Numerical cryogenic marks, starting with 601 to 653, were placed on each of the 53 animals. Two-digit freeze marks (i.e. 01, 02, 03, etc.) were placed on both sides of the dorsal fin; whereas, 3 digit marks(i.e. 601, 602, 603, etc.) were placed on both sides of the animal. Freeze marks were applied with the aid of branding irons fitted with 5 cm high brass numbers. Prior to application of the freeze mark, the branding irons were super-cooled in liquid nitrogen. The skin surface of each animal was towel dried before applying the brand, and, as soon as the branding irons were removed from the skin, the branded site was brought to ambient temperature by pouring sea water. The amount of time it took to apply an individual number was recorded.

Results and Discussion:

The average time required to apply each number on the dorsal fin was 23.8 seconds (N = 53; SD = 4.7; SE = 0.3), whereas, those on the side took 19.6 seconds (N = 53; SD = 4.7; SE = 0.2).

There were several factors that affected the quality and appearance of the freeze mark. Some of these include the flatness and size of the dorsal fin, application pressure, and the shape of the number being applied. Numbers 2, 4, 5, and 8 usually took longer and more manipulation to obtain a good freeze mark. Another important factor was the condition of the skin prior to the application of the freeze mark. If the skin was not completely dried, icing would occur between the brand and the skin, resulting in

subcutaneous herrorhaging and a poor brand. Based on limited sightings during the study of previously marked animals, it appears that the pigmented epidermis at the brand site is sloughed off in about 5 to 10 days to reveal a recognizable number. Our observations on the appearance of the freeze mark agree with the findings of Odell and Asper (1982). Animal No. 608 was recaptured after 21 days of processing and brought on board for reexamination. The freeze marks at reexamination were clear (see figure 31) and visible from 91 to 152 meters.

HEMATOLOGY AND CHEMISTRY

Materials & Methods:

Blood was obtained through puncture of blood vessels draining the flukes. After disinfecting the site with 70% alcohol and iodine, a 20 gauge 1½ inch needle and 20 ml syringe were used to draw blood. Five ml of blood were placed in an EDTA coated vacutainer tube (Terumo Medical Elkton, Maryland) for hematology and 10 ml of blood in each of the three heparinized vacutainer tubes for serum chemistry and enzymes, endocrinology, and biochemical genetics. Two ml of blood were placed in a 10 ml vacutainer culture tube (Becton-Dickinson, Rutherford, New Jersey) containing supplemented peptone broth for microbiology. All tubes were marked with the animal number and date, put in a rack, and kept on ice until processed. The hematology and chemistry were conducted by the Pathology Laboratory of the Gulfport Memorial Hospital as soon as the specimens were delivered to them; in all cases at the end of each day. The hematology was done with the aid of Coulter Counter S+ and serum chemistry and enzymes on a Technicon SMA-1260, Lietz-Beckman Astra-8, and a Dupont ACA2. The refrigerated blood for biochemical genetics was sent by courier within 24 hours after its collection to Dr. Paul Toom, Department of Chemistry, University of Southern Mississippi, Hattiesburg, Mississippi. The blood culture tubes along with the culturettes were sent to Dr. Bob Middlebrooks, Department of Microbiology, University of Southern Mississippi, Hattiesburg, Mississippi for analysis. Plasma from 10 ml of blood was separated for endocrinology and immediately frozen and kept at -70° C. at

Gulfport Memorial Hospital. After all 50 samples were collected, they were dispatched to Dr. Daniel Odell, University of Miami, Miami, Florida. In addition to the above samples, 5 tubes each with 10 ml of blood from dolphins, numbers 641 to 645 were sent to Dr. Deborah Duffield, Portland State University, Oregon, via Federal Express for biochemical genetical analysis and comparison.

Results and Discussion:

A complete hematological analysis including differential counts for the dolphins processed are provided in Tables 11 and 12. Comparisons of blood data between males and females are given in Table 13. The values for RBC, MCV, MCH, and MCHC were significantly different between males and females at $t\alpha.05$; however, only MCH and MCHC were different at $t\alpha.01$. The clinical significance of this difference between males and females in MCH and MCHC are not known.

Results of the serum chemistry and enzymes are listed in Tables 14, 15, and 16. Comparisons between males and females showed a significant difference in the values for calcium and total protein at $t\alpha.05$ but not at $t\alpha.01$. Values for several enzymes such as A-phos, LDH, SGOT, SGPT, CPK, and Amylase were higher for Mississippi dolphins than those from dolphins collected from the Indian/Banana River area (Odell and Asper, 1982) A comparison of serum analysis between the Sea World Laboratory and Gulfport Memorial Hospital, Mississippi was conducted on sera from four dolphins. Results of this test are shown in Table 17. The above mentioned parameters

were consistently higher with approximately the same ratio between the four dolphins for the same tests. This would suggest a difference in testing procedures between laboratories rather than in the actual values. Laboratory supervisors from both institutions are currently evaluating their respective procedures.

TABLE 1. SUMMARY OF CAPTURE EVENTS FOR *Tursiops truncatus* COLLECTED FROM THE MISSISSIPPI SOUND.

CAPTURE EVENT	DATE	LATITUDE	LONGITUDE	ANIMALS SET ON	ESCAPED/ RELEASED	ANIMALS BROUGHT ABOARD	ANIMALS PROCESSED	BRAND NO.
1	6-28-82	30° 14 · 11'	89° 05 . 72'	5	3-A	5	2	601-602
2	6-28-82	30° 14 · 20'	89° 08 . 90'	5	1-B	5	4	641-603-605
3	6-30-82	30° 18 · 75'	89° 05 . 65'	3	1	3	2	606-607
4	6-30-82	30° 14 · 19'	89° 05 . 00'	2	X	2	2	608-609
5	6-30-82	30° 14 · 35'	89° 05 . 10'	2	1	2	1	610
6	7-6-82	30° 20 · 7'	89° 06 . 55'	4	4-C	X	X	X
7	7-6-82	30° 19 · 90'	89° 08 . 12'	3	X	3	3	611-613
8	7-6-82	30° 18 · 05'	89° 10 . 39'	3	3-C	X	X	X
9	7-6-82	30° 18 · 48'	89° 11 . 20'	4	X	4	4	614-617
10	7-7-82	30° 22 · 15'	89° 51 . 70'	4	X	4	4	618-621
11	7-7-82	30° 20 · 75'	88° 51 . 60'	5	1	4	4	622-625
12	7-13-82	30° 19 · 81'	89° 06 . 61'	4	1	4	3	626-628
13	7-13-82	N/A	N/A	10	10-D	X	X	X
14	7-20-82	30° 22 · 31'	89° 01 . 19'	3	X	3	3	629-631
15	7-20-82	30° 21 · 40'	88° 50 . 55'	1	X	1	1	632
16	7-20-82	30° 21 · 89'	88° 57 . 51'	6	3	5	3	633-635
17	7-21-82	30° 12 · 45'	89° 07 . 30'	10	6	5	4	636-639
18	7-21-82	30° 13 · 98'	89° 08 . 91'	4	3	4	1	640
19	7-27-82	30° 16 · 95'	88° 34 . 45'	5	3	4	2	642-643
20	7-27-82	30° 17 · 80'	88° 33 . 75'	3	1	2	2	644-645
21	8-2-82	30° 19 · 5'	89° 07 . 5'	10	10-E	X	X	X
22	8-2-82	30° 14 · 62'	89° 04 . 45'	3	3-C	X	X	X
23	8-2-82	30° 14 · 51'	89° 04 . 50'	3	1-F	3	2	646-647
24	8-2-82	30° 14 · 79'	89° 03 . 31'	3	X	3	3	648-650
		Subtotal.....		105	55	66	50	
25	10-27-82			1	X	1	1	651
26	10-27-82			4	3-F	4	1	652
27	11-2-82			2	1-G	2	1	653
		Subtotal.....		7	4	7	3	
		Totals.....		112	59	73	53	

TABLE 1. (CONTINUED) SUMMARY OF CAPTURE EVENTS .

REMARKS:

A. Two animals taken to Marine Life
B. One animal taken to Marine Life and released on 7-25-82 as 641.
C. Escaped before circle was completed.
D. Large number of calves in group.
E. Too many in set; all released.
F. One taken to Marine Life.
G. One taken to Marine Life and released 11-6-82; pregnant.

TABLE 2. SUMMARY OF TYPES OF DATA COLLECTED FROM EACH DOLPHIN PROCESSED IN 1982

				Wt.	Lth.			CULTURES			BLOOD			BIOPSY TOOTH				
BN	CE	DATE	S	Kg.	cm.	P	M	BH	AN.	VA.	CBC	SMA	END	G.	LR	SB	AGE	B.T.
601	1	6/28/82	F	140	247	+	+	+	+	+	+	+	+	+	-	+	+	+
602	1	6/28/82	F	136	221	+	+	+	+	+	+	+	+	+	-	+	+	+
603	2	6/28/82	M	104	208	+	+	+	+	-	+	+	+	+	-	+	+	+
604	2	6/28/82	M	100	208	+	+	+	+	-	+	+	+	+	-	+	+	+
605	2	6/28/82	F	149	244	+	+	+	+	+	+	+	+	+	-	+	+	+
606	3	6/30/82	F	104	212	+	+	+	+	+	+	+	+	+	-	+	+	+
607	3	6/30/82	M	111	207	+	+	+	+	-	+	+	+	+	-	+	+	+
608	4	6/30/82	M	159	247	+	+	+	+	-	+	+	+	+	-	+	+	+
609	4	6/30/82	M	131	214	+	+	+	+	-	+	+	+	+	-	+	+	+
610	5	6/30/82	F	168	246	+	+	+	+	+	+	+	+	+	-	+	+	+
611	6	7/6/82	F	152	237	+	+	+	+	+	+	+	+	+	+	+	+	+
612	6	7/6/82	M	170	233	+	+	+	+	-	+	+	+	+	+	+	+	+
613	6	7/6/82	M	222	255	+	+	+	+	-	+	+	+	+	+	+	+	+
614	7	7/6/82	F	136	217	+	+	+	+	+	+	+	+	+	-	-	+	+
615	7	7/6/82	M	120	212	+	+	+	+	-	-	+	+	+	-	-	+	+
616	7	7/6/82	F	111	216	+	+	+	+	+	+	+	+	+	-	+	+	+
617	7	7/6/82	F	140	249	+	+	+	+	+	+	+	+	+	+	+	BR	+
618	8	7/7/82	F	161	232	+	+	+	+	+	+	+	+	+	+	+	+	+
619	8	7/7/82	M	122	221	+	+	+	+	-	+	+	+	+	-	-	+	+
620	8	7/7/82	F	118	220	+	+	+	+	+	+	+	+	+	-	-	+	+
621	8	7/7/82	M	127	214	+	+	+	+	-	+	+	+	+	+	+	+	+
622	9	7/7/82	M	136	218	+	+	+	+	-	+	+	+	+	-	-	+	+
623	9	7/7/82	F	129	222	+	+	+	+	+	+	+	+	+	-	-	-	+
624	9	7/7/82	M	152	239	+	+	+	+	-	+	+	+	+	+	+	+	+
625	9	7/7/82	F	102	208		+	+	+	+	+	+	+	+	-	-	+	+
626	10	7/13/82	F	91	193	∓	+	+	+	+	+	+	+	+	-	-	+	+
627	10	7/13/82	F	152	222	+	+	+	+	+	+	+	+	+	-	-	+	+

REMARKS:

BN	Branding No.	Wt.	Weight	M	Morphometrics	VA	Vaginal
CE	Capture Event No.	Lth.	Length	BH	Blowhole	CBC	Hematology
S	Sex	P	Photographs	AN	Anal	SMA	Serum Chemistry
G	Genetics	LR	Liver	SB	Skin/blubber	END	Endocrinology
				BR	Broken	BT	Branding Time

TABLE 2. (CONTINUED) SUMMARY OF DATA TYPES COLLECTED.

BN	CE	DATE	S	Wt. kg.	Lth. cm.	P	M	CULTURES BH.	CULTURES AN.	BLOOD VA.	BLOOD CBC	BLOOD SMA	BLOOD END	BLOOD G.	BIOPSY LR	BIOPSY SB	TOOTH AGE	TOOTH B.T.
628	10	7/13/82	F	140	230	+	+	+	+	+	+	+	+	+	-	-	+	+
629	11	7/20/82	F	116	216	+	+	+	+	+	+	+	+	+	-	-	+	+
630	11	7/20/82	M	143	232	+	+	+	+	-	+	+	+	+	+	+	+	+
631	11	7/20/82	M	120	215	+	+	+	+	-	+	+	+	+	-	-	+	+
632	12	7/20/82	F	136	229	+	+	+	+	+	+	+	+	+	-	-	+	+
633	13	7/20/82	M	204	246	+	+	+	+	-	+	+	+	+	+	+	+	+
634	13	7/20/82	F	165	224	+	+	+	+	+	+	+	+	+	-	-	+	+
635	13	7/20/82	M	220	257	+	+	+	+	-	+	+	+	+	+	+	+	+
636	14	7/21/82	M	116	216	+	+	+	+	-	+	+	+	+	-	-	+	+
637	14	6/21/82	F	222	248	+	+	+	+	+	+	+	+	+	-	-	+	+
638	14	7/21/82	F	193	254	+	+	+	+	+	+	+	+	+	+	+	+	+
639	14	7/21/82	F	204	248	+	+	+	+	+	+	+	+	+	-	-	+	+
640	15	7/21/82	F	174	236	+	+	+	+	+	+	+	+	+	-	-	+	+
641*	2	6/28/82	F	132	235	-	+	+	+	+	+	+	+	+	-	-	+	+
642	16	7/27/82	M	131	222	+	+	+	+	-	+	+	+	+	+	+	+	+
643	16	7/27/82	M	136	221	+	+	+	+	-	+	+	+	+	+	+	+	+
644	17	7/27/82	F	152	232	+	+	+	+	+	+	+	+	+	+	+	+	+
645	17	7/27/82	F	177	239	+	+	+	+	+	+	+	+	+	+	+	+	+
646	18	8/2/82	F	145	230	+	+	+	+	+	+	+	+	+	+	+	+	+
646	18	8/2/82	F	116	215	+	+	+	+	+	+	+	+	+	-	-	+	+
648	19	8/2/82	F	170	232	+	+	+	+	+	+	+	+	+	+	+	+	+
649	19	8/2/82	F	116	208	+	+	+	+	-	+	+	+	+	-	-	+	+
650	19	8/2/82	F	129	216	+	+	+	+	+	+	+	+	+	-	-	+	+
651	20	10/27/82	F	122	226	-	+	-	-	-	-	-	-	-	-	-	-	-
652	21	10/27/82	M	132	241	-	+	-	-	-	-	-	-	-	-	-	-	-
653	22	11/6/82	F	159	-	-	+	+	+	+	+	+	+	-	-	-	-	-

*Captured on 6/28/82 and released on 7/25/82.

TABLE 3. SUMMARY OF ENVIRONMENTAL DATA AT THE SITE OF COLLECTION.

CAPTURE EVENT	ANIMAL NO.	DEPTH METERS	SALINITY, ppt.	AIR TEMP C°	WATER TEMP C°
1	601, 602	1.8	20	X	X
2	641, 603, 604, 605	0.9	X	X	X
3	606, 607	2.7	X	X	X
4	608, 609	0.8	15	36°	31°
5	610	3.4	15	36°	31°
6	611, 612, 613	1.5	20	28°	28°
7	614, 615, 616, 617	2.6	21	32°	31°
8	618, 619, 620, 621	1.5	22	28°	30°
9	622, 623, 624, 625	3.0	24	33°	31°
10	626, 627, 628	2.6	22	27°	29°
11	629, 630, 631	0.9	18	29°	29°
12	632	1.2	20	33°	32°
13	633, 634, 635	2.7	20	32°	32°
14	636, 637, 638, 639	1.5	24	33°	30°
15	640	0.9	23	36°	32°
16	642, 643	2.4	15	31°	32°
17	644, 645	2.4	15	34°	32°
18	646, 647	3.4	22	32°	33°
19	648, 649, 650	0.8	28	29°	28°
20	651	0.5	X	X	X
21	652	1.5	X	X	X
22	653	2.9	X	X	X

TABLE 4. MORPHOMETRIC DATA-BASE FOR DOLPHINS COLLECTED FROM THE MISSISSIPPI SOUND. ALL MEASUREMENTS ARE IN CENTIMETERS

ANIMAL NO.	601	602	603	604	605	606	607	608	609	610	611	612
SEX	F	F	M	M	F	F	M	M	M	F	F	M
S-Eye	31.5	28.0	30.5	30.0	32.5	31.5	28.5	35.5	30.0	30.5	32.5	30.0
S-Ear	40.0	36.5	36.0	36.5	37.5	37.5	35.0	42.0	35.5	37.5	39.0	35.5
S-O. of Flipper	52.0	48.0	47.0	48.0	52.5	57.0	45.5	46.0	50.0	45.5	54.0	48.5
S-Melon	10.5	10.0	12.0	11.5	12.0	11.0	10.5	11.5	11.0	12.0	10.5	11.0
S-A of Jaw	22.5	25.5	23.0	24.5	26.5	27.5	23.5	25.5	26.5	24.5	27.0	25.5
S-Blowhole	33.5	29.0	34.5	31.0	34.0	32.5	28.5	32.5	34.0	32.0	13.5	29.0
S-Dorsal	107.5	99.5	92.0	94.0	112.0	94.5	91.5	107.5	97.0	108.0	107.0	106.0
Pec (O. to T.)	41.5	39.5	35.5	36.5	39.0	38.0	37.5	42.0	37.5	40.5	40.5	42.0
Pec (Width)	18.0	16.0	15.0	14.5	16.5	14.5	15.0	17.5	16.5	16.0	17.5	17.5
Fluke (Width)	70.0	62.5	51.0	56.0	64.5	60.5	58.5	66.5	64.0	67.0	66.5	64.0
Ht. of Dorsal	23.0	21.0	21.5	19.5	25.5	23.5	19.5	23.5	21.5	23.0	19.0	21.5
Girth (Dorsal)	134.0	135.0	120.0	112.0	138.0	123.0	128.0	138.0	133.0	140.0	135.0	142.0
Girth (Umbilicus)	113.0	111.0	103.0	95.0	123.0	103.0	115.0	122.0	115.0	154.0	121.0	127.0

REMARKS:

S-Snout
O-Origin
A-Angle
T-Tip
Ht-Height

TABLE 4. (CONTINUED) MORPHOMETRIC DATA-BASE. MEASUREMENTS IN CENTIMETERS.

ANIMAL NO.	613	614	615	616	617	618	619	620	621	622	623	624
SEX	M	F	M	F	F	F	M	F	M	M	F	M
S-Eye	32.5	30.0	30.5	32.5	31.0	32.0	30.5	28.5	34.5	30.0	30.0	31.5
S-Ear	40.0	35.5	36.5	39.5	37.5	39.0	36.0	35.0	40.0	36.5	36.5	39.0
S-Pec	51.0	48.5	51.5	50.0	51.0	51.0	45.5	45.5	50.5	49.5	45.0	54.5
S-Melon	11.0	10.5	10.0	10.0	10.5	12.0	11.0	10.0	11.0	12.0	10.5	11.0
S-A of Jaw	25.5	25.5	25.0	27.7	26.0	26.0	25.5	24.5	29.5	26.0	24.0	25.5
S-Blowhole	36.0	28.0	26.5	28.5	31.5	31.5	28.5	31.5	30.5	35.5	30.0	33.5
S-Dorsal	120.5	97.5	96.0	96.0	95.0	110.0	110.0	104.0	96.5	98.0	103.5	113.0
Pec (O. to T.)	45.5	38.5	38.0	36.5	37.0	39.5	39.5	37.5	40.0	37.5	40.5	42.0
Pec (Width)	19.0	15.5	15.0	15.5	15.0	16.0	15.5	15.0	15.5	15.5	15.5	17.0
Fluke (Width)	63.5	60.5	59.0	62.5	62.0	57.5	55.5	57.0	50.5	62.0	63.0	61.5
Ht. of Dorsal	23.5	22.0	18.5	22.0	21.0	20.5	19.5	19.5	18.5	20.5	21.5	23.5
Girth (Dorsal)	170.0	134.0	130.0	120.0	121.0	140.0	127.0	129.0	129.5	129.0	128.0	140.0
Girth (Umbilicus)	148.0	105.0	108.0	100.0	100.0	122.0	111.0	110.0	100.5	111.0	108.0	110.0

TABLE 4. (CONTINUED) MORPHOMETRIC DATA-BASE. MEASUREMENTS IN CENTIMETERS.

ANIMAL NO.	625	626	627	628	629	630	631	632	633	634	635	636
SEX	F	F	F	F	F	M	M	F	M	F	M	M
S-Eye	29.5	30.0	31.5	30.0	28.0	33.0	32.5	33.5	29.5	32.0	31.0	31.5
S-Ear	37.0	35.5	38.0	35.5	34.0	35.5	38.0	38.5	37.0	37.5	39.0	35.0
S-Pec	51.0	45.5	47.0	47.0	45.5	54.5	45.0	50.0	49.0	53.0	50.5	49.5
S-Melon	11.0	10.0	11.5	11.5	10.0	10.5	10.0	10.5	11.5	11.0	10.5	9.0
S-Jaw	24.5	23.0	24.5	25.5	24.0	27.0	28.5	28.5	27.0	26.0	26.5	25.5
S-B. Hole	31.5	32.0	28.5	32.5	28.5	28.0	29.5	29.5	35.0	30.5	28.5	28.5
S-Dorsal	97.5	92.0	103.5	101.5	91.0	100.5	94.5	101.0	110.5	104.5	108.5	97.0
Pec (O. to tip)	35.0	37.0	37.5	43.0	39.5	43.0	38.0	40.0	43.5	39.5	45.5	38.0
Pec (Width)	14.0	13.5	15.5	17.0	15.5	17.5	14.5	15.5	18.5	17.0	18.5	16.5
Fluke (Width)	50.0	49.5	61.5	63.5	59.5	66.0	55.5	57.5	66.5	65.0	62.5	58.0
Ht. of Dorsal	19.5	16.5	20.5	22.0	21.0	22.0	19.0	19.5	26.0	21.5	19.5	19.5
Girth (Dorsal)	119.0	117.0	139.0	134.0	128.0	134.0	130.0	124.0	158.0	144.0	158.0	127.0
Girth (Umbilicus)	96.0	99.0	124.0	110.0	103.0	115.0	109.0	105.0	144.0	130.0	134.0	108.0

TABLE 4. (CONTINUED) MORPHOMETRIC DATA-BASE. MEASUREMENTS IN CENTIMETERS.

ANIMAL NO.	637	638	639	640	641	642	643	644	645	646	647
SEX	F	F	F	F	F	M	M	F	F	F	F
S-Eye	32.0	32.0	31.5	32.0	31.5	26.5	32.0	32.0	30.5	30.5	30.0
S-Ear	38.0	39.0	38.5	40.0	37.5	38.0	38.5	37.5	37.0	39.0	37.0
S-Pec	51.5	53.5	52.5	53.5	51.0	45.5	49.5	43.5	55.5	49.0	49.0
S-Melon	11.5	11.0	11.0	10.5	12.0	11.0	13.0	12.0	10.5	11.5	11.5
S-Jaw	25.0	28.5	28.0	25.5	26.5	29.5	23.0	27.5	24.5	27.0	25.0
S-B. Hole	33.0	28.5	30.0	30.5	29.5	29.5	28.5	28.0	25.5	34.5	29.5
S-Dorsal	116.0	111.5	113.0	110.0	106.0	95.0	96.0	100.5	101.5	100.0	91.5
Pec (O. to Tip)	40.0	37.0	40.5	41.0	40.5	39.5	40.5	40.5	39.5	37.0	37.0
Pec (Width)	17.5	16.5	17.5	16.5	16.5	15.5	15.5	16.5	16.0	16.0	14.5
Fluke (Width)	70.0	66.5	60.5	66.5	61.5	64.5	65.5	64.5	63.5	64.5	56.5
Ht. Dorsal	20.0	19.5	18.5	22.0	20.5	20.5	19.5	18.5	19.5	19.5	20.5
Girth (Dorsal)	160.0	149.0	156.0	146.0	132.0	125.0	130.0	144.0	151.0	134.0	126.0
Girth (Umbilicus)	150.0	125.0	136.0	128.0	114.0	100.0	113.0	131.0	131.0	124.0	108.0

TABLE 4. (CONTINUED) MORPHOMETRIC DATA-BASE. MEASUREMENTS IN CENTIMETERS.

ANIMAL NO.	648	649	650	651	652	653
SEX	F	F	F	F	M	F
Snout - Eye	28.5	32.0	30.0	33.0	31.0	36.0
Snout - Ear	35.0	37.0	36.0	41.0	38.5	41.0
Snout - Pec	47.5	50.5	45.0	44.0	50.0	55.0
Snout - Melon	9.5	9.5	10.5	13.0	9.0	11.0
Snout - Jaw	26.5	23.5	26.5	28.5	26.5	29.0
Snout - Blowhole	28.0	30.5	28.5	31.0	28.0	34.0
Snout - Dorsal	103.0	90.0	99.5	97.5	93.5	88.0
Pec (Origin to Tip)	36.5	35.0	38.5	40.0	38.0	43.0
Pec (Width)	16.0	14.0	16.0	16.0	15.5	17.0
Fluke (Width)	64.5	57.5	60.5	59.5	59.0	72.0
Ht. Dorsal	17.5	19.0	19.5	20.0	23.5	23.0
Girth (Dorsal)	146.0	112.0	131.0	158.0	134.0	150.0
Girth (Umbilicus)	130.0	102.0	114.0	122.0	107.0	58.0

TABLE 5. COMPARISON OF MEAN MORPHOMETRIC VALUES BETWEEN MALES AND FEMALES. MEASUREMENTS ARE IN CENTIMETERS

	MALES				FEMALES			
MEASUREMENT	N	$\bar{X}$	SD	SE	N	$\bar{X}$	SD	SE
Snout - Eye	20	31.08	1.98	0.44	33	31.10	1.67	0.29
Snout - Ear	20	37.40	1.94	0.43	33	37.59	1.71	0.29
Snout - Pec	20	49.10	2.71	0.60	33	49.69	3.60	0.62
Snout - Melon	20	10.90	0.95	0.21	33	10.91	0.82	0.14
Snout - Jaw	20	25.95	1.81	0.40	33	25.90	1.69	0.29
Snout - Blowhole	20	30.77	2.97	0.66	33	29.98	3.63	0.63
Snout - Dorsal	20	100.87	8.22	1.83	33	101.62	7.17	1.24
Pec O to T	20	39.97	2.91	0.65	33	38.97	2.02	0.35
Pec Width	20	16.27	1.40	0.31	33	15.92	1.07	0.18
Fluke Width	20	60.47	4.91	1.09	33	62.06	4.97	0.86
Ht. of Dorsal	20	21.02	2.08	0.46	33	20.59	1.84	0.32
Girth-Dorsal	20	134.72	13.65	3.05	33	135.66	12.21	2.12
Girth-Umbilicus	20	114.77	13.99	3.12	33	115.45	17.60	3.06

TABLE 6. MEAN VALUES OF VARIOUS BODY MEASUREMENTS OF ALL THE DOLPHINS PROCESSED DURING THE STUDY. MEASUREMENTS IN CENTIMETERS

MEASUREMENT	N	$\bar{X}$	SD	SE
Snout - Eye	53	31.09	1.77	0.24
Snout - Ear	53	37.51	1.78	0.24
Snout - Pec	53	49.47	3.28	0.45
Snout - Melon	53	10.90	0.86	0.11
Snout - Jaw	53	25.91	1.72	0.23
Snout - Blowhole	53	30.28	3.39	0.46
Snout - Dorsal	53	101.34	7.51	1.03
Pec - O to T	53	39.34	2.42	0.33
Pec Width	53	16.05	1.20	0.16
Fluke Width	53	61.46	4.96	0.68
Ht Dorsal	53	20.75	1.93	0.26
Girth Dorsal	53	135.31	12.65	1.73
Girth Umbilicus	53	115.19	16.19	2.22

TABLE 7. MORPHOMETRIC MEASUREMENTS OF THE 53 DOLPHINS STUDIED EXPRESSED AS A FRACTION OF THE TOTAL LENGTH.

ANIMAL	601	602	603	604	605	606	607	608	609	610	611	612
SEX	F	F	M	M	F	F	M	M	M	F	F	M
Snout-Eye	.127	.126	.146	.144	.133	.148	.137	.143	.140	.123	.137	.128
Snout-Ear	.162	.165	.173	.175	.153	.176	.169	.170	.165	.152	.164	.152
Snout-O. Flipper	.211	.217	.225	.230	.215	.268	.219	.190	.233	.184	.227	.208
Snout-Melon	.042	.045	.057	.055	.049	.051	.050	.046	.051	.048	.044	.047
Snout-A. Jaw	.091	.115	.110	.117	.108	.129	.113	.103	.123	.099	.113	.109
Snout-Blowhole	.136	.131	.165	.149	.139	.153	.137	.131	.158	.130	.056	.124
Snout-Dorsal	.435	.450	.442	.451	.459	.445	.442	.435	.453	.439	.451	.454
Pec (O. to tip)	.168	.178	.170	.175	.159	.179	.181	.170	.175	.164	.170	.180
Pec (Width)	.072	.072	.072	.069	.067	.068	.072	.070	.077	.065	.073	.075
Fluke (Width)	.283	.282	.245	.269	.264	.285	.282	.269	.299	.272	.280	.274
Ht. of Dorsal	.093	.095	.103	.093	.104	.110	.094	.095	.100	.093	.080	.092
Girth (Dorsal)	.542	.610	.576	.538	.565	.580	.618	.558	.621	.569	.569	.609
Girth (Umbilicus)	.457	.502	.495	.456	.504	.485	.555	.493	.537	.626	.510	.545

TABLE 7. (CONTINUED) MORPHOMETRIC MEASUREMENTS-EXPRESSED AS A FRACTION OF THE TOTAL LENGTH.

ANIMAL	613	614	615	616	617	618	619	620	621	622	623	624
SEX	M	F	M	F	F	F	M	F	M	M	F	M
Snout-Eye	.127	.138	.143	.150	.124	.137	.138	.129	.161	.137	.135	.131
Snout-Ear	.156	.163	.172	.182	.150	.168	.162	.159	.186	.167	.164	.163
Snout-O. Flipper	.200	.223	.242	.231	.204	.219	.205	.206	.235	.227	.202	.228
Snout-Melon	.043	.048	.047	.046	.042	.051	.049	.045	.051	.055	.047	.046
Snout-A. Jaw	.100	.117	.117	.128	.104	.112	.115	.111	.137	.119	.108	.106
Snout-Blowhole	.141	.129	.125	.131	.126	.135	.128	.143	.142	.162	.135	.140
Snout-Dorsal	.472	.449	.452	.444	.381	.474	.497	.472	.450	.449	.466	.472
Pec (O. to tip)	.178	.177	.179	.168	.148	.170	.178	.170	.186	.172	.182	.175
Pec (Width)	.074	.071	.070	.071	.060	.068	.070	.068	.072	.071	.069	.071
Fluke (Width)	.249	.278	.278	.289	.248	.247	.251	.259	.235	.284	.283	.257
Ht. of Dorsal	.092	.101	.087	.101	.084	.088	.088	.088	.086	.094	.096	.098
Girth (Dorsal)	.666	.617	.613	.555	.485	.603	.574	.586	.605	.591	.576	.585
Girth (Umbilicus)	.580	.483	.509	.462	.401	.525	.502	.500	.469	.509	.486	.460

TABLE 7. (CONTINUED) MORPHOMETRIC MEASUREMENTS-EXPRESSED AS A FRACTION OF THE TOTAL LENGTH.

ANIMAL	625	626	627	628	629	630	631	632	633	634	635	636
SEX	F	F	F	F	F	M	M	F	M	F	M	M
Snout-Eye	.141	.155	.141	.130	.129	.142	.151	.146	.119	.142	.120	.145
Snout-Ear	.177	.183	.171	.154	.157	.153	.176	.168	.150	.167	.151	.162
Snout-O. Flipper	.245	.235	.211	.204	.210	.234	.209	.218	.199	.236	.196	.229
Snout-Melon	.052	.051	.051	.050	.046	.045	.046	.045	.046	.049	.040	.041
Snout-A. Jaw	.117	.119	.110	.110	.111	.116	.132	.124	.109	.116	.103	.118
Snout-Blowhole	.151	.165	.128	.141	.131	.120	.137	.128	.142	.136	.110	.131
Snout-Dorsal	.468	.476	.466	.441	.421	.433	.439	.441	.449	.466	.422	.449
Pec (O. to tip)	.168	.191	.168	.186	.182	.185	.176	.174	.176	.176	.177	.175
Pec (Width)	.067	.069	.069	.073	.071	.075	.067	.067	.075	.075	.071	.076
Fluke (Width)	.240	.256	.277	.276	.275	.284	.258	.251	.270	.290	.243	.268
Ht. of Dorsal	.093	.085	.092	.095	.097	.094	.088	.085	.105	.095	.075	.090
Girth (Dorsal)	.572	.606	.626	.582	.592	.577	.604	.541	.642	.642	.614	.587
Girth (Umbilicus)	.461	.512	.558	.478	.476	.495	.506	.458	.585	.580	.521	.500

TABLE 7. (CONTINUED) MORPHOMETRIC MEASUREMENTS-EXPRESSED AS A FRACTION OF THE TOTAL LENGTH.

ANIMAL	637	638	639	640	641	642	643	644	645	646	647
SEX	F	F	F	F	F	M	M	F	F	F	F
Snout-Eye	.129	.125	.127	.135	.134	.119	.144	.137	.127	.132	.139
Snout-Ear	.153	.153	.155	.169	.159	.171	.174	.161	.154	.169	.172
Snout-O. Flipper	.207	.210	.211	.226	.217	.204	.223	.187	.232	.213	.227
Snout-Melon	.046	.043	.044	.044	.051	.049	.058	.051	.043	.050	.053
Snout-A. Jaw	.100	.112	.112	.108	.112	.132	.104	.118	.102	.117	.116
Snout-Blowhole	.133	.112	.120	.129	.125	.132	.128	.120	.106	.150	.137
Snout-Dorsal	.467	.438	.455	.466	.451	.427	.434	.433	.424	.434	.425
Pec (O. to tip)	.161	.145	.163	.173	.172	.177	.183	.174	.165	.160	.172
Pec (Width)	.070	.064	.070	.069	.070	.069	.070	.071	.066	.069	.067
Fluke (Width)	.282	.261	.243	.281	.261	.290	.296	.278	.265	.280	.262
Ht. of Dorsal	.080	.076	.074	.093	.087	.092	.088	.079	.081	.084	.095
Girth (Dorsal)	.645	.586	.629	.618	.561	.563	.588	.620	.631	.582	.586
Girth (Umbilicus)	.604	.492	.548	.542	.485	.450	.511	.564	.548	.539	.502

TABLE 7. (CONTINUED) MORPHOMETRIC MEASUREMENTS-EXPRESSED AS A FRACTION OF THE TOTAL LENGTH.

ANIMAL	648	649	650	651	652	653
SEX	F	F	F	F	M	F
Snout-Eye	.122	.153	.138	.146	.128	*
Snout-Ear	.150	.177	.166	.181	.159	*
Snout-O. Flipper	.204	.242	.208	.194	.207	*
Snout-Melon	.040	.045	.048	.057	.037	*
Snout-A. Jaw	.114	.112	.122	.126	.109	*
Snout-Blowhole	.120	.146	.131	.137	.116	*
Snout-Dorsal	.443	.432	.460	.431	.387	*
Pec (O. to tip)	.157	.168	.178	.176	.157	*
Pec (Width)	.068	.067	.074	.070	.064	*
Fluke (Width)	.278	.276	.280	.263	.244	*
Ht. of Dorsal	.075	.091	.090	.088	.097	*
Girth (Dorsal)	.629	.538	.606	.699	.556	*
Girth (Umbilicus)	.560	.490	.527	.539	.443	*

Remarks:

*Length on animal no. 653 not available.

TABLE 8. MEAN VALUES OF THE BODY MEASUREMENTS FOR ALL ANIMALS AFTER THEY WERE CONVERTED TO A FRACTION OF THE TOTAL LENGTH.

TEST	N	$\bar{X}$	SD	SE
Snout - Eye	52	.136	.009	.001
Snout - Ear	52	.164	.009	.001
Snout - O. of Pec	52	.217	.016	.002
Snout - Melon	52	.047	.004	.0006
Snout - A. of Jaw	52	.113	.009	.001
Snout - Blowhole	52	.132	.016	.002
Snout - Dorsal	52	.446	.020	.002
Pec (O. to Tip)	52	.172	.009	.001
Pec (Width)	52	.070	.003	.0004
Fluke (Width)	52	.269	.015	.002
Ht. of Dorsal	52	.090	.007	.001
Girth (Dorsal)	52	.592	.036	.005
Girth (Umbilicus)	52	.510	.044	.006

TABLE 9. COMPARISON OF MEAN BODY MEASUREMENTS OF MALE AND FEMALE DOLPHINS. ALL MEASUREMENTS ARE EXPRESSED AS FRACTIONS OF THE TOTAL LENGTH.

	MALES				FEMALES			
TEST	N	$\bar{X}$	SD	SE	N	$\bar{X}$	SD	SE
Snout - Eye	20	.137	.011	.002	32	.135	.008	.001
Snout - Ear	20	.165	.009	.002	32	.164	.009	.001
Snout - O. of F.	20	.217	.015	.003	32	.217	.017	.003
Snout - Melon	20	.047	.005	.001	32	.047	.003	.0006
Snout - A. of Jaw	20	.114	.010	.002	32	.112	.008	.001
Snout - Blowhole	20	.135	.014	.003	32	.130	.018	.003
Snout - Dorsal	20	.445	.021	.004	32	.446	.019	.003
Pec (O. to T.)	20	.176	.006	.001	32	.170	.009	.001
Pec (Width)	20	.071	.003	.0007	32	.069	.003	.0005
Fluke (Width)	20	.267	.018	.004	32	.270	.013	.002
Ht. of Dorsal	20	.092	.006	.001	32	.089	.008	.001
Girth (Dorsal)	20	.594	.030	.006	32	.592	.040	.007
Girth (Umbil.)	20	.506	.040	.008	32	.512	.047	.008

TABLE 10. AVERAGE LENGTH AND WEIGHT FOR MALES, FEMALES AND BOTH SEXES COMBINED. MEASUREMENTS ARE IN KG. AND CM.

	N	$\bar{X}$	SD	SE
Combined male & female weight	53	143.64	31.77	4.36
Combined male & female length	52	227.50	14.98	2.07
males weight	20	142.80	35.79	8.00
males length	20	226.30	16.16	3.61
females weight	33	144.15	29.64	5.16
females length	32	228.25	14.40	2.54

TABLE 11. HEMATOLOGICAL ANALYSES FOR THE 53 DOLPHINS SAMPLED FROM THE MISSISSIPPI SOUND.

NUMBER	601	602	603	604	605	606	607	608	609	610	611
SEX	F	F	M	M	F	F	M	M	M	F	F
TEST											
WBC	8.2	8.3	10.1	9.5	10.8	9.7	8.0	11.2	13.4	8.9	13.5
RBC	3.2	3.3	3.8	4.1	4.0	3.8	3.3	3.2	3.6	3.2	3.1
Hgb.	13.7	13.8	14.3	15.7	15.5	15.2	13.8	12.7	14.8	14.0	12.7
Hct	42.0	43.2	44.9	49.0	47.9	50.5	42.7	40.5	44.8	41.0	38.8
MCV	128.9	129.9	117.7	118.1	117.7	129.8	126.3	122.9	121.3	125.7	125.2
MCH	42.1	41.4	37.6	37.8	38.2	39.2	41.1	38.6	40.2	43.0	41.0
MCHC	32.7	31.9	31.9	31.9	32.4	30.2	32.5	31.4	33.1	34.2	32.7
PLT	124.0	170.0	147.0	199.0	175.0	229.0	136.0	215.0	136.0	74.0	162.0
Seg	26.0	42.0	47.0	50.0	49.0	41.0	44.0	27.0	37.0	38.0	47.0
Band	2.0	9.0	5.0	4.0	X	9.0	17.0	19.0	12.0	12.0	1.0
Lymph	17.0	16.0	16.0	11.0	28.0	28.0	21.0	28.0	11.0	10.0	10.0
Mono	1.0	1.0	2.0	X	1.0	1.0	X	2.0	1.0	1.0	1.0
EOS	52.0	32.0	29.0	35.0	20.0	19.0	18.0	23.0	39.0	39.0	41.0
A-typical	2.0	X	X	X	2.0	2.0	X	1.0	X	X	X
Baso	X	X	1.0	X	X	X	X	X	X	X	X
NRBC	X	X	X	X	X	X	2.0	X	X	X	X

Units: WBC x 10^3; RBC x 10^6; Hgb.-gm; Hct-%; MCV- um^3; MCH-uug; MCHC-g/dl; PLT-x 10^3; Seg.-%; Band-%; Lymph-%; Mono-%; EOS-%; Atypical-%; Baso-%; NRBC-%

TABLE 11. (CONTINUED) HEMATOLOGICAL ANALYSES FOR THE 53 DOLPHINS SAMPLED FROM THE MISSISSIPPI SOUND.

NUMBER	612	613	614	615	616	617	618	619	620	621	622
SEX	M	M	F	M	F	F	F	M	F	M	M
TEST											
WBC	9.5	11.1	8.5	X	9.1	9.0	5.5	11.8	10.9	10.7	11.9
RBC	3.9	4.0	3.4	X	3.4	3.7	3.9	4.0	3.9	3.7	3.8
Hgb.	15.5	15.0	15.0	X	15.3	16.6	14.8	16.8	15.2	14.4	14.8
Hct	47.4	44.6	44.9	X	46.2	48.6	44.9	54.0	47.6	44.7	45.5
MCV	121.2	110.4	129.6	X	133.9	128.9	113.3	133.4	121.5	120.9	118.4
MCH	39.8	37.2	43.5	X	44.3	44.0	37.4	41.5	38.8	38.8	38.4
MCHC	32.8	33.6	33.5	X	33.1	34.1	33.0	31.1	31.9	32.1	32.5
PLT	133.0	109.0	141.0	X	149.0	167.0	136.0	142.0	175.0	165.0	154.0
Seg	53.0	49.0	44.0	X	38.0	40.0	32.0	34.0	38.0	38.0	36.0
Band	1.0	6.0	3.0	X	1.0	3.0	4.0	6.0	4.0	4.0	1.0
Lymph	15.0	7.0	37.0	X	24.0	28.0	25.0	22.0	32.0	20.0	29.0
Mono	1.0	X	1.0	X	1.0	X	1.0	2.0	X	X	X
EOS	30.0	38.0	15.0	X	36.0	28.0	38.0	36.0	26.0	38.0	34.0
A-typical	X	X	X	X	X	1.0	X	X	X	X	X
Baso	X	X	X	X	X	X	X	X	X	X	X
NRBC	X	X	X	X	X	X	X	X	X	X	X

TABLE 11. (CONTINUED) HEMATOLOGICAL ANALYSES FOR THE 53 DOLPHINS SAMPLED FROM THE MISSISSIPPI SOUND.

NUMBER	623	624	625	626	627	628	629	630	631	632	633
SEX	F	M	F	F	F	F	F	M	M	F	M
TEST											
WBC	18.0	9.1	11.4	11.7	10.1	11.3	10.5	18.1	15.8	9.8	8.6
RBC	3.9	3.5	3.6	3.6	3.5	3.7	3.5	3.8	3.5	3.2	3.6
Hgb.	16.6	14.5	13.8	16.1	15.1	15.5	15.1	16.4	15.6	13.7	13.6
Hct	51.9	46.1	42.4	48.0	44.2	46.6	45.4	49.2	49.3	40.7	42.3
MCV	130.4	130.1	116.4	131.1	123.7	123.6	126.5	127.9	137.6	126.5	115.7
MCH	41.7	41.0	38.0	43.9	42.4	41.2	42.2	42.6	43.7	42.7	37.2
MCHC	32.0	31.5	32.6	33.5	34.2	33.3	33.4	33.3	31.7	33.7	32.1
PLT	122.0	153.0	166.0	188.0	145.0	113.0	148.0	164.0	163.0	143.0	96.0
Seg	34.0	40.0	44.0	46.0	45.0	50.0	38.0	26.0	43.0	22.0	41.0
Band	X	1.0	4.0	X	X	X	X	11.0	X	X	11.0
Lymph	57.0	27.0	29.0	19.0	34.0	9.0	20.0	40.0	26.0	29.0	6.0
Mono	X	X	X	2.0	X	1.0	1.0	3.0	1.0	2.0	X
EOS	9.0	32.0	23.0	33.0	21.0	40.0	41.0	20.0	29.0	47.0	42.0
A-typical	X	X	X	X	X	X	X	X	X	X	X
Baso	X	X	X	X	X	X	X	X	1.0	X	X
NRBC	X	X	X	X	X	X	X	X	1.0	X	X

TABLE 11. (CONTINUED) HEMATOLOGICAL ANALYSES FOR THE 53 DOLPHINS SAMPLED FROM THE MISSISSIPPI SOUND.

NUMBER	634	635	636	637	638	639	640	641	642	643
SEX	F	M	M	F	F	F	F	F	M	M
TEST										
WBC	9.2	7.0	12.8	6.9	13.8	7.9	17.5	9.3	11.7	8.8
RBC	3.4	3.4	3.8	3.7	3.1	3.3	3.73	3.6	3.9	3.8
Hgb.	14.6	13.5	14.9	16.1	13.7	14.2	14.1	14.2	15.7	14.6
Hct	42.6	41.2	44.8	49.7	41.2	43.4	43.7	42.8	47.4	44.7
MCV	122.2	120.4	117.9	131.9	131.6	130.9	117.1	117.5	119.4	117.0
MCH	42.0	39.6	39.3	42.8	43.7	42.9	37.9	39.2	39.6	38.2
MCHC	34.4	32.9	33.3	32.4	33.2	32.7	32.3	33.3	33.2	32.7
PLT	115.0	159.0	190.0	116.0	144.0	104.0	140.0	144.0	171.0	156.0
Seg	67.0	36.0	37.0	53.0	61.0	46.0	39.0	82.0	30.0	42.0
Band	X	16.0	2.0	X	5.0	X	X	2.0	3.0	1.0
Lymph	9.0	22.0	34.0	30.0	14.0	38.0	11.0	10.0	31.0	36.0
Monc	1.0	X	X	1.0	X	1.0	1.0	2.0	X	X
EOS	23.0	26.0	26.0	16.0	20.0	15.0	48.0	4.0	36.0	21.0
A-typical	X	X	1.0	X	X	X	1.0	X	X	X
Baso	X	X	X	X	X	X	X	X	X	X
NRBC	X	X	1.0	X	X	X	X	X	X	X

TABLE 11. (CONTINUED) HEMATOLOGICAL ANALYSES FOR THE 53 DOLPHINS SAMPLED FROM THE MISSISSIPPI SOUND.

NUMBER	644	645	646	647	648	649	650	651	652	653
SEX	F	F	F	F	F	F	F	F	M	F
TEST										
WBC	10.4	5.8	14.4	15.1	11.5	10.1	9.6	X	X	8.4
RBC	3.4	3.2	3.3	3.5	3.5	3.7	3.9	X	X	3.6
Hgb.	13.7	14.2	14.7	14.6	15.1	16.2	16.2	X	X	15.1
Hct	41.4	42.8	43.2	42.5	44.3	49.1	47.9	X	X	46.0
MCV	121.3	133.4	129.6	120.9	124.2	129.4	121.3	X	X	125.8
MCH	40.3	44.4	44.0	41.4	42.4	42.8	41.2	X	X	41.4
MCHC	33.2	33.3	33.9	34.2	34.1	33.1	33.9	X	X	32.9
PLT	106.0	144.0	121.0	151.0	160.0	149.0	146.0	X	X	130.0
Seg	41.0	37.0	40.0	20.0	33.0	34.0	39.0	X	X	76.0
Band	2.0	2.0	5.0	X	1.0	4.0	1.0	X	X	2.0
Lymph	20.0	25.0	22.0	29.0	28.0	29.0	22.0	X	X	5.0
Mono	X	X	X	X	X	X	X	X	X	2.0
EOS	37.0	36.0	33.0	51.0	38.0	33.0	37.0	X	X	15.0
A-typical	X	X	X	X	X	X	X	X	X	X
Baso	X	X	X	X	X	X	X	X	X	X
NRBC	X	1.0	X	X	X	X	X	X	X	X

Remarks:

Samples for Animal Nos. 615, 651, and 652 coagulated.

TABLE 12. MEAN VALUES FOR HEMATOLOGICAL PARAMETERS FOR ALL THE DOLPHINS SAMPLED DURING THE STUDY.

TEST	N	$\bar{X}$	SD	SE
WBC	50	10.68	2.84	.40
RBC	50	3.64	.27	.04
Hgb.	50	14.82	.99	.14
Hct.	50	45.17	3.23	.465
MCV	50	124.33	6.13	.87
MCH	50	40.87	2.18	.31
MCHC	50	32.86	.89	.13
PLT.	50	147.70	29.09	4.11
SEGS	50	41.84	11.70	1.66
BANDS	50	3.92	4.81	.68
LYMPH	50	22.92	10.44	1.48
MONO	50	0.70	.79	.11
EOS	50	30.36	10.76	1.52
ATYPICAL	50	.20	.54	.08
BASO	50	.04	.20	.03
NRBC	50	.10	.36	.05

TABLE 13. COMPARISON OF HEMATOLOGICAL PARAMETERS FOR MALE AND FEMALE DOLPHINS

	FEMALES				MALES			
TEST	N	$\bar{X}$	SD	SE	N	$\bar{X}$	SD	SE
WBC	32	10.47	2.91	0.52	18	11.06	2.75	0.65
RBC	32	3.57	0.27	0.05	18	3.75	0.24	0.06
Hgb.	32	14.83	0.97	0.17	18	14.81	1.04	0.25
HCT	32	44.86	3.20	0.57	18	45.73	3.29	0.78
MCV	32	125.62	5.47	0.97	18	122.03	6.72	1.58
MCH	32	41.61	2.03	0.36	18	39.57	1.85	0.43
MCHC	32	33.10	0.89	0.16	18	32.42	.74	0.17
PLT	32	143.66	28.79	5.09	18	154.89	29.02	6.84
SEG	32	43.19	13.41	2.38	18	39.44	7.59	1.79
BANDS	32	2.38	3.01	0.54	18	6.67	6.13	1.44
LYMPH	32	23.25	10.85	1.92	18	22.33	9.95	2.34
MONO	32	.719	0.68	0.12	18	0.67	0.97	0.23
EOS	32	30.19	12.44	2.20	18	30.67	7.15	1.69
ATYPICAL	32	.25	0.62	0.11	18	0.11	0.32	0.08
BASO	32	X	X	X	18	0.11	0.32	0.08
NRBC	32	.031	.18	.03	18	0.22	0.55	0.13

TABLE 14. SERUM CHEMISTRY AND ENZYME ANALYSES FOR THE 53 DOLPHINS SAMPLED FROM THE MISSISSIPPI SOUND.

NUMBER	601	602	603	604	605	606	607	608	609	610	611	612	613
SEX	F	F	M	M	F	F	M	M	M	F	F	M	M
TEST													
CA++	8.9	9.8	9.0	9.1	9.7	11.1	9.4	9.2	8.9	8.8	9.4	9.4	9.2
I-PHOS.	4.6	3.4	4.7	3.9	4.1	6.1	6.6	4.2	4.6	4.1	5.2	4.9	4.7
GLU.	80	99	100	105	139	124	128	85	107	100	81	87	90
B.U.N.	52	82	67	67	54	72	60	58	64	57	60	66	63
U-AC	0.6	1.9	1.4	1.2	0.7	1.7	0.8	1.2	1.7	1.1	1.7	1.2	1.1
CHOL.	164	225	181	230	192	165	169	129	176	149	205	245	186
T.P.	7.6	6.9	6.8	6.4	6.9	7.3	7.5	7.4	7.0	6.9	8.5	7.9	7.3
ALB.	3.4	3.3	3.3	3.2	3.5	3.6	3.4	3.1	3.2	3.2	3.4	3.5	3.6
T-BIL.	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1
A-PHOS.	94	173	249	167	350	350	350	200	350	98	198	127	71
L.D.H.	510	480	582	600	586	600	600	600	600	441	459	600	463
SGOT	255	217	289	300	300	285	276	269	300	224	192	300	246
Na	158	158	158	159	158	160	154	156	155	156	158	159	157
K	3.8	3.9	4.1	4.0	3.6	4.6	4.8	4.9	3.8	4.2	4.3	3.9	4.5
Cl	118	112	111	115	116	116	116	118	112	117	117	111	115
CO_2	24	28	30	28	29	13	23	26	31	27	18	30	30
AMYLASE	15	111	11	16	13	11	13	14	16	12	13	21	27
CPK	70	140	146	268	106	238	156	108	162	138	114	224	184
SGPT	X	X	X	X	X	X	X	X	X	X	X	X	X

UNITS:

CA++ - mg%; I-PHOS - mg%; GLU. - mg%; B.U.N. - mg%; U-AC - mg%; CHOL - mg%;
T.P. - gm%; ALB - gm%; T-BIL - mg%; A-PHOS - iu/L: L.D.H. - iu/L; SGOT - iu/L:
NA - Meg/L: K - meg/L: cl - meg/L; CO_2 - meg/L: AMYLASE - iu/L; CPK - iu/L;
SGPT - iu/L

TABLE 14. (CONTINUED) SERUM CHEMISTRY AND ENZYME ANALYSES.

NUMBER	614	615	616	617	618	619	620	621	622	623	624	625	626
SEX	F	M	F	F	F	M	F	M	M	F	M	F	F
TEST													
CA++	9.5	9.6	9.6	9.7	9.3	9.6	10.2	9.1	9.4	10.6	9.7	9.1	9.6
I-PHOS.	4.6	4.1	4.3	4.5	4.2	5.4	6.7	5.5	4.5	5.8	4.9	6.1	5.7
GLU.	120	120	113	112	96	127	90	142	122	134	127	150	169
B.U.N.	64	57	63	59	65	62	68	63	57	57	68	66	48
U-AC	2.0	1.3	0.8	0.9	1.4	1.2	2.0	1.2	0.6	0.7	1.6	1.2	0.9
CHOL.	180	196	189	259	198	227	174	181	173	206	198	164	217
T.P.	7.4	6.9	8.1	7.8	7.5	7.1	7.7	6.6	7.0	7.3	7.5	6.8	6.7
ALB.	3.9	3.7	3.7	3.7	3.8	3.6	4.0	3.3	3.5	3.7	3.3	3.3	3.7
T-BIL.	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.8	0.7	0.6	0.5	0.2
A-PHOS.	256	350	350	350	232	350	350	350	350	350	350	350	350
L.D.H.	480	590	580	600	600	600	600	600	580	600	600	600	600
SGOT	239	300	300	300	300	300	300	300	239	300	300	290	300
Na	159	157	155	155	156	158	158	157	157	156	158	154	155
K	4.4	3.8	3.7	3.4	4.0	4.5	3.6	4.6	3.8	3.6	4.8	4.2	4.1
Cl	116	117	112	116	117	112	112	115	115	112	115	111	119
CO_2	25	25	32	27	22	18	21	23	31	19	24	28	18
AMYLASE	13	12	13	15	16	16	17	13	16	12	20	11	12
CPK	126	158	188	266	134	220	226	176	150	174	104	406	378
SGPT	X	X	X	X	X	X	X	X	X	X	X	X	X

TABLE 14. (CONTINUED) SERUM CHEMISTRY AND ENZYME ANALYSES.

NUMBER	627	628	629	630	631	632	633	634	635	636	637	638
SEX	F	F	F	M	M	F	M	F	M	M	F	F
TEST												
CA++	9.2	9.3	9.4	9.9	9.9	9.6	9.4	9.4	9.4	8.8	10.4	9.6
I-PHOS.	4.9	4.8	5.4	5.0	6.7	3.6	4.4	5.3	4.1	5.3	4.9	4.4
GLU.	118	98	83	96	119	89	95	111	96	94	117	100
B.U.N.	78	69	69	68	68	69	59	60	60	58	57	44
U-AC	1.8	1.4	1.9	1.9	1.3	1.2	0.9	1.1	0.7	0.7	1.4	0.7
CHOL.	201	216	132	157	145	207	160	165	133	153	199	239
T.P.	6.8	7.3	7.2	7.2	7.3	7.7	8.2	7.9	8.0	6.8	8.6	8.2
ALB.	3.3	3.3	3.9	3.7	3.7	3.7	3.6	3.7	3.5	3.3	4.2	3.5
T-BIL.	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.3	0.3
A-PHOS.	266	156	350	350	350	102	66	248	78	252	149	197
L.D.H.	600	442	558	586	600	600	423	523	456	519	430	449
SGOT	270	194	267	261	287	300	300	300	263	256	214	277
Na	156	154	158	157	161	155	155	155	154	157	159	155
K	4.5	4.8	4.0	4.0	4.8	4.4	4.0	3.5	3.6	3.5	3.8	3.8
Cl	117	119	112	116	116	110	114	114	114	118	115	110
CO_2	25	22	26	17	17	30	26	20	26	22	19	24
AMYLASE	14	14	14	19	16	21	20	18	25	14	19	22
CPK	198	98	216	232	268	148	134	102	112	306	140	82
SGPT	X	X	X	X	X	X	X	X	X	X	X	X

TABLE 14. (CONTINUED) SERUM CHEMISTRY AND ENZYME ANALYSES

NUMBER	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653
SEX	F	F	F	M	M	F	F	F	F	F	F	F	F	M	F
TEST															
CA++	9.6	9.8	9.8	9.0	8.5	9.2	9.5	9.8	9.4	9.7	10.3	9.3	X	X	9.2
I-PHOS.	3.0	5.2	5.1	4.2	4.3	4.1	5.2	4.4	5.5	5.7	5.9	5.6	X	X	6.0
GLU.	127	98	93	135	128	102	84	109	113	93	121	118	X	X	128
B.U.N.	56	77	36	74	73	58	66	52	68	69	66	65	X	X	44
U-AC	0.6	2.1	0.5	3.0	2.7	0.8	2.0	0.9	2.5	0.9	1.1	1.2	X	X	0.2
CHOL.	159	159	199	182	221	195	223	137	224	216	239	193	X	X	190
T.P.	8.2	8.1	7.8	7.5	6.9	8.1	8.2	7.5	6.7	7.6	7.3	6.7	X	X	8.2
ALB.	3.9	3.5	3.7	3.6	3.2	3.8	3.9	3.5	3.5	3.5	3.8	3.4	X	X	4.5
T-BIL.	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	X	X	0.2
A-PHOS.	142	77	219	350	350	174	219	99	350	243	247	350	X	X	225
L.D.H.	496	522	583	600	532	416	488	600	600	456	573	520	X	X	600
GLOT	244	300	300	300	264	200	300	300	300	268	300	300	X	X	300
Na	155	163	157	153	158	157	158	150	155	152	155	155	X	X	156
K	3.8	5.5	2.8	4.3	4.2	3.6	3.8	4.1	4.6	4.1	5.0	4.6	X	X	3.4
Cl	117	116	111	111	117	120	119	110	114	117	113	117	X	X	118
CO_2	27	20	28	30	25	23	22	28	27	19	24	27	X	X	24
AMYLASE	21	16	21	17	15	17	17	25	16	15	16	11	X	X	X
CPK	162	62	140	226	186	72	148	80	356	134	426	318	X	X	X
SGPT	X	X	39	18	20	7	11	37	19	15	12	14	X	X	33

REMARKS:

Animals numbered 651 and 652 - sample coagulated.
SGPT test not conducted for animals 601 to 640.

TABLE 15. MEAN VALUES FOR SERUM CHEMISTRY PARAMETERS FOR ALL DOLPHINS SAMPLED DURING THE STUDY.

TEST	N	$\bar{X}$	SD	SE
CA ++	51	9.50	.47	.07
I-PHOS.	51	4.91	.83	.12
GLU	51	110.04	19.45	2.72
B.U.N.	51	62.39	8.70	1.22
U-AC	51	1.29	.58	.08
CHOL.	51	188.67	31.46	4.41
T.P.	51	7.43	.55	.08
ALB	51	3.62	.28	.04
T-BIL.	51	.19	.16	.02
A-PHOS.	51	249.49	101.31	14.19
LDH	51	547.51	63.40	8.88
SGOT	51	276.20	32.06	4.49
NA	51	156.49	2.26	.32
K	51	4.11	.51	.07
Cl	51	114.86	2.75	.39
CO_2	51	24.47	4.39	.61
AMYLASE	50	18.04	13.95	1.98
CPK	50	182.12	87.15	12.32
SGPT	11	20.45	10.94	3.30

TABLE 16. COMPARISON OF MEAN SERUM-CHEMISTRY PARAMETERS FOR MALE AND FEMALE DOLPHINS

	FEMALES				MALES			
TEST	N	$\bar{X}$	SD	SE	N	$\bar{X}$	SD	SE
CA++	32	9.62	.48	.09	19	9.29	.37	.08
I-PHOS	32	4.95	.86	.15	19	4.84	.78	.18
GLU	32	109.66	20.60	3.64	19	110.68	17.88	4.10
BUN	32	61.56	10.23	1.81	19	63.79	5.18	1.19
U-AC	32	1.25	.57	.10	19	1.35	.63	.14
CHOL	32	193.13	30.42	5.38	19	181.16	32.57	7.47
T.P.	32	7.55	.56	.10	19	7.23	.47	.11
ALB	32	3.70	.30	.05	19	3.49	.19	.04
T-BIL	32	.19	.13	.02	19	.19	.20	.05
A-PHOS	32	239.50	94.99	16.79	19	266.32	111.79	25.65
LDH	32	537.25	65.37	11.56	19	564.79	57.49	13.19
SGOT	32	273.00	36.98	6.54	19	281.58	21.26	4.88
Na	32	156.28	2.41	.43	19	156.84	1.98	.45
K	32	4.05	.54	.10	19	4.21	.44	.10
Cl	32	115.00	3.02	.53	19	114.63	2.29	.53
CO_2	32	23.94	4.26	.75	19	25.37	4.57	1.05
AMYLASE	31	18.74	17.49	3.14	19	16.89	4.23	.97
CPK	31	180.19	101.89	18.30	19	185.26	57.93	13.29
SGPT	11	20.45	10.94	3.30	2	19.00	1.41	1.00

TABLE 17. COMPARISON OF SERUM ANALYSIS PROCEDURES/RESULTS BETWEEN SEA WORLD LABORATORY, FLORIDA AND GULFPORT MEMORIAL HOSPITAL, MISSISSIPPI

NAME	BASHFUL	BASHFUL	SILVER	SILVER	COSMOS	COSMOS	LEANA	LEANA
SEX	M	M	M	M	M	M	F	F
TEST	SW	GMH	SW	GMH	SW	GMH	SW	GMH
CA++	9.9	9.6	9.3	9.3	9.4	9.0	9.2	9.0
I-PHOS.	X	5.3	X	4.8	X	6.2	X	4.5
GLU.	133.7	134.0	133.7	135.0	96.4	42.0	107.3	112.0
B.U.N.	32.1	48.0	31.4	48.0	32.5	10.0	35.7	35.0
U-AC	X	0.1	X	0.2	X	0.0	X	0.1
CHOL.	224.0	180.0	253.5	200.0	230.2	182.0	285.0	231.0
T.P.	7.5	7.8	7.9	8.4	7.4	7.8	7.3	7.6
ALB	4.1	5.1	4.2	5.2	4.2	5.0	3.8	4.6
T-BIL	0.3	0.1	0.4	0.1	0.3	0.1	0.3	0.2
A-PHOS	361.6	628.0	375.8	651.0	641.6	1136.0	375.6	669.0
L.D.H.	261.4	606.0	290.0	480.0	373.8	720.0	257.1	211.0
SGOT	208.1	340.0	153.1	280.0	243.8	440.0	110.7	169.0
SGPT	26.8	49.0	18.4	21.0	50.5	29.0	23.9	13.0
CREAT.	1.5	1.2	1.4	1.2	1.7	1.5	1.2	1.1
TRYGLY.	90.1	54.0	79.4	44.0	72.3	44.0	115.7	88.0
CPK	81.2	130.0	76.8	154.0	105.0	135.0	118.0	120.0
AMYLASE	10.2	22.0	12.0	22.0	8.0	21.0	10.4	21.0
Na	152.4	158.0	151.9	156.0	148.4	162.0	152.4	158.0
K	X	3.7	X	3.9	X	6.1	X	3.6
Cl	109.2	116.0	109.8	120.0	111.4	124.0	111.2	120.0
CO_2	X	25.0	X	X	X	X	X	X
H-BD	529.6	X	740.0	X	531.3	X	541.2	X
Mg	X	X	2.1	X	2.2	X	2.3	X

SW = SEA WORLD
GMH = GULFPORT MEMORIAL

CAPTURE EVENT DATA SHEET

		REMARKS
Capture Event No.		
Date		
Time Set Made		
Time Set Terminated		
Loran Reading		
Latitude		
Longitude		
No. of Animals Set On		
No. of Animals Escaped		
No. of Animels Captured		
No. of Males Captured		
No. of Females Captured		
No. of Previously Marked Captured		
Pre-Capture Herd Behavior		
Sighting Cue		
Photographs		
Water Depth (M)		
Water Temp (^{o}C)		
Air Temp (^{o}C)		
Salinity (PPT)		
Sea State		
Comments:		

FIGURE 1: DATA SHEET USED TO RECORD INFORMATION ON CAPTURE EVENTS AND ENVIRONMENTAL CONDITIONS AT THE COLLECTION SITE.

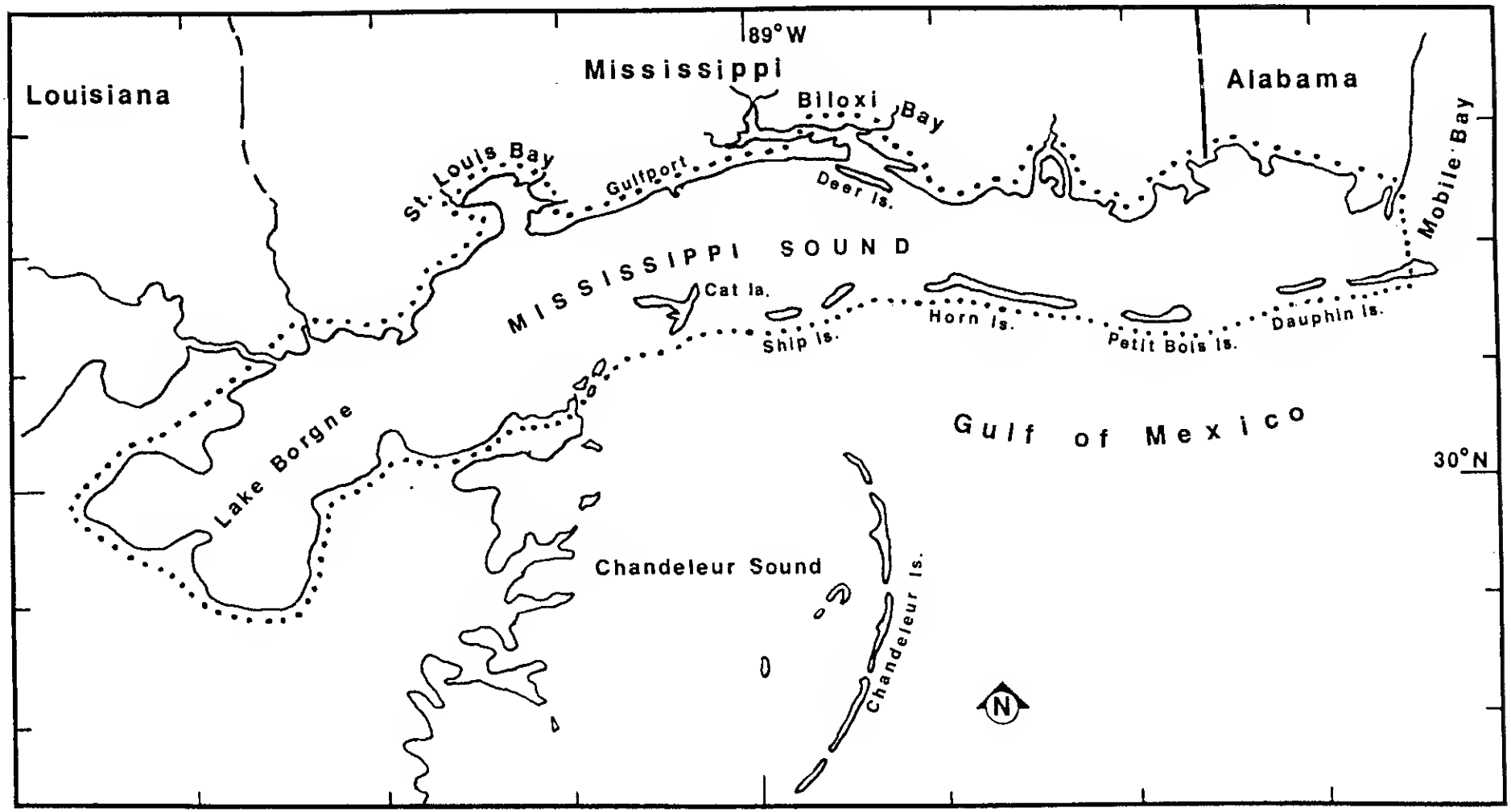

FIGURE 2: MAP SHOWING THE BOUNDARIES FOR THE MISSISSIPPI SOUND, MISSISSIPPI.

CAPTURED INDIVIDUAL DATA SHEET

		REMARKS				
Brand No.						
Capture Event No.						
Date						
Time Brought Aboard						
Time Released						
Sex						
Length						
Weight						
Tooth Rake Marks						
Other Skin Conditions						
Pregnant						
Lactating						
Freeze Branding		Right Dorsal	Right Side	Left Dorsal	Left Side	
Summary	Brand #					
	Seconds					
Liver Biopsy (Time)						
Blubber/Skin Biopsy (Time)						
Blood Chemistry						
SMA (Vol.)						
CBC (Vol.)						
Endocrinology (Vol.)						
Genetics (Vol.)						
Culture - Blood						
Culture - Blowhole						
Culture - Anal						
Culture - Vaginal						
Tooth Extraction (Time)						
Comments						

FIGURE 3: DATA SHEET USED TO RECORD BIOLOGICAL DATA FOR EACH ANIMAL COLLECTED.